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for a predetermined period, to an atmosphere consisting substantially of hydrogen under ordinary atmospheric pressure at ordinary temperature.

2. (Amended) The low attenuation optical fiber according to Claim 1, further comprising:

a dispersion slope (S) of no more than 0.15 ps/nm^2/km over a wavelength band of 1530 to 1565 nm;

a polarization mode dispersion characteristic (PMD) of no more than 0.5 ps/$\sqrt{}$km; and,

a loss increase of no more than 40 dB/m at a wavelength of 1550 nm as coiled in a diameter of 20 mm.

3. (Amended) The low attenuation optical fiber according to Claim 1, further comprising:

an effective area (Aeff) of no more than 90 μm^2 at a wavelength of 1550 nm.

4. (Amended) The low attenuation optical fiber according to Claim 1, further comprising:

a dispersion slope of 0.04 ps/nm^2/km to 0.08 ps/nm^2/km over a wavelength band of 1530 to 1565 nm;

a dispersion of 6 ps/nm/km to 10 ps/nm/km in absolute value; and

an effective area of 40 μm^2 to 70 μm^2 at a wavelength of 1550 nm.

5. (Amended) The low attenuation optical fiber according to Claim 1, further comprising:

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an effective area of no more than 90 μm^2 at a wavelength of 1550 nm.

6. (Amended) The low attenuation optical fiber according to Claim 2, further comprising:

a dispersion slope of 0.04 ps/nm^2/km to 0.08 ps/nm^2/km over a wavelength band of 1530 to 1565 nm;

a dispersion of 6 ps/nm/km to 10 ps/nm/km in absolute value; and

an effective area of 40 μm^2 to 70 μm^2 at a wavelength of 1550 nm.

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7. (Amended) A low attenuation optical fiber comprising:

a dispersion characteristic (D) of 2.0 to 14.0 ps/nm/km in absolute value over a wavelength band of 1530 to 1565 nm;

a transmission loss at a wavelength of 1520 nm which remains no more than 0.25 dB/km under standard atmospheric conditions; and

a transmission loss at a wavelength of 1550 nm which remains no more than 0.25 dB/km after being exposed, for a predetermined period, to an atmosphere consisting substantially of hydrogen under ordinary atmospheric pressure at ordinary temperature.

8. (Amended) The low attenuation optical fiber according to Claim 7, further comprising:

a dispersion slope (S) of no more than 0.15 ps/nm^2/km over a wavelength band of 1530 to 1565 nm;

a polarization mode dispersion characteristic (PMD) of no more than 0.5 ps/$\sqrt{}$km; and,

a loss increase of no more than 40 dB/m at a wavelength of 1550 nm as coiled in a

diameter of 20 mm.

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9. (Amended) The low attenuation optical fiber according to Claim 7, further comprising:

an effective area (Aeff) of no more than 90 μm^2 at a wavelength of 1550 nm.

10. (Amended) The low attenuation optical fiber according to Claim 7, further comprising:

a dispersion slope of 0.04 $ps/nm^2/km$ to 0.08 $ps/nm^2/km$ over a wavelength band of 1530 to 1565 nm;

a dispersion of 6 ps/nm/km to 10 ps/nm/km in absolute value; and

an effective area of 40 μm^2 to 70 μm^2 at a wavelength of 1550 nm.

11. (Amended) The low attenuation optical fiber according to Claim 8, further comprising:

an effective area of no more than 90 μm^2 at a wavelength of 1550 nm.

12. (Amended) The low attenuation optical fiber according to Claim 8, further comprising:

a dispersion slope of 0.04 $ps/nm^2/km$ to 0.08 $ps/nm^2/km$ over a wavelength band of 1530 to 1565 nm;

a dispersion of 6 ps/nm/km to 10 ps/nm/km in absolute value; and

an effective area of 40 μm^2 to 70 μm^2 at a wavelength of 1550 nm.